

ABSTRACT OF THE DISCLOSURE

Disclosed are a processing method and apparatus for removing a native oxide film from the surface of a subject to be treated. In this method and apparatus, gas generated from N_2 , H_2 and NF_3 gases is reacted with the surface of the subject to degenerate the native oxide film into a reactive film. If the subject is heated to a given temperature, the reactive film is sublimated and thus the native oxide film is removed. Plasma is generated from the N_2 and H_2 gases and then activated to form an activated gas species. The NF_3 gas is added to the activated gas species to generate an activated gas of these three gases. In the step of forming the reactive film, the subject is cooled to not higher than a predetermined temperature by a cooling means. In the step of sublimating the reactive film, the subject is lifted up to a predetermined heating position. Also disclosed is a cluster system which includes the treatment apparatus of the present invention and other apparatuses and which is capable of carrying a subject to be treated in an unreactive atmosphere.